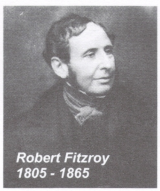
Storm Bottle

Set-up & Interpretation Instructions

HISTORY



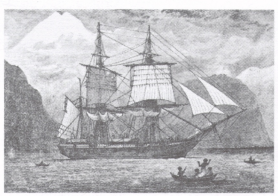
Robert Fitzroy
1805 - 1865

Atmospheric pressure? Temperature? Electrical disturbances? The simple fact is, no one is quite sure how a storm bottle works. Or indeed how accurate it is.

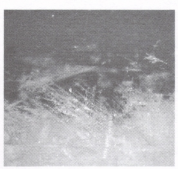
Nevertheless, aboard *HMS Beagle* during the Darwin Expeditions of 1831-36 Captain Robert Fitzroy developed and refined the storm bottle (invented in the mid-18th century) and after considerable observation and testing suggested that changes in crystal formation could be used to predict quite subtle changes in the weather.

Now of course from a purely practical point of view there are sophisticated electronic weather stations that will give you a far more reliable local forecast. But...there's something utterly fascinating about this sort of instrument - so admired by the early Victorians - that bridges the divide between the magic of alchemy and the pragmatism of science.

It can be fun to keep a record of both the crystal patterns and the actual weather outside and see if you can form your own forecast pattern. Added interest can be had from recording the temperature and barometric pressure and observing the crystals to see how they change in response to these environmental changes. See if you can confirm Robert Fitzroy's observations opposite.



HMS Beagle



Changing crystals predict weather patterns

SETTING UP YOUR STORM BOTTLE

When you receive your storm bottle it will be in a state of disruption after travelling. Remove the glass and base from their packaging and gently fit them together. It can take up to a week for the liquid to settle correctly and start to develop crystals. The storm bottle should be located somewhere where it will not be subjected to extreme temperature changes, such as near a heater, radiator or in direct sunlight. Once located, the instrument should be left undisturbed for the chemicals to stabilise and the liquid to come to room temperature.

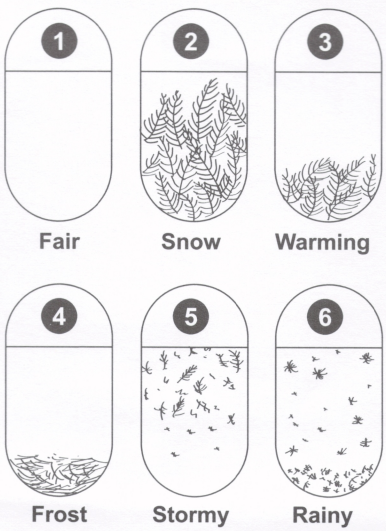
Crystal growth works best when the liquid is reacting to gentle, natural changes in temperature and pressure, hence the need to keep it away from sources of extreme temperature change.

The optimal temperature range for crystal formation is between 5°C (41F) and 30°C (86F). Outside these temperature ranges the crystals will tend to dissolve and the liquid remain clear. However, once the liquid returns within this optimal temperature range it will begin to form crystals again.

Interpreting your Storm Bottle

(Observations from Captain Robert Fitzroy)

1. Clear liquid predicts:
   Bright, fair weather
2. Large fernlike crystals growing predicts:
   Heavy air, overcast conditions. Snow in winter
3. Large fernlike crystals receding predicts:
   Warmer weather
4. Small crystals gathered at the bottom predicts:
   Heavy air, frost in winter
5. Crystals gathering towards the top predicts:
   Strong winds, blustery conditions
6. Cloudy liquid, small crystals all over predict:
   Rain



WARNING:
This instrument should be handled with care and kept out of the reach of children. Contains distilled water, ammonium chloride, potassium nitrate, camphor, and ethanol. If accidentally swallowed, medical advice should be sought.

Since 1974 Nauticalia
Ferry Lane, Shepperton, Middlesex, TW17 9LQ
Tel: +44 (0)1932 244396 www.nauticalia.com